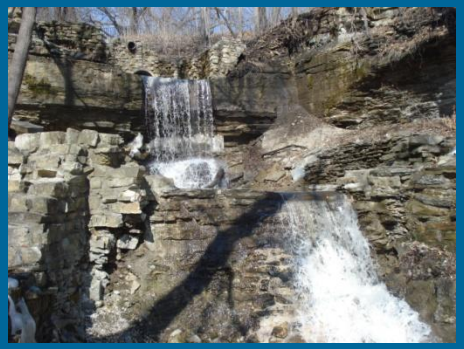
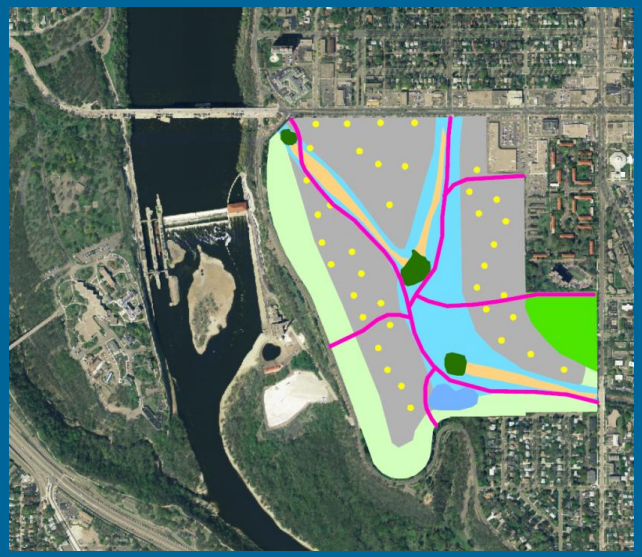
Sustainable Stormwater Feasibility Report - Ford Plant, St. Paul





Phil Belfiori

Nathan Campeau

Presentation to MPCA

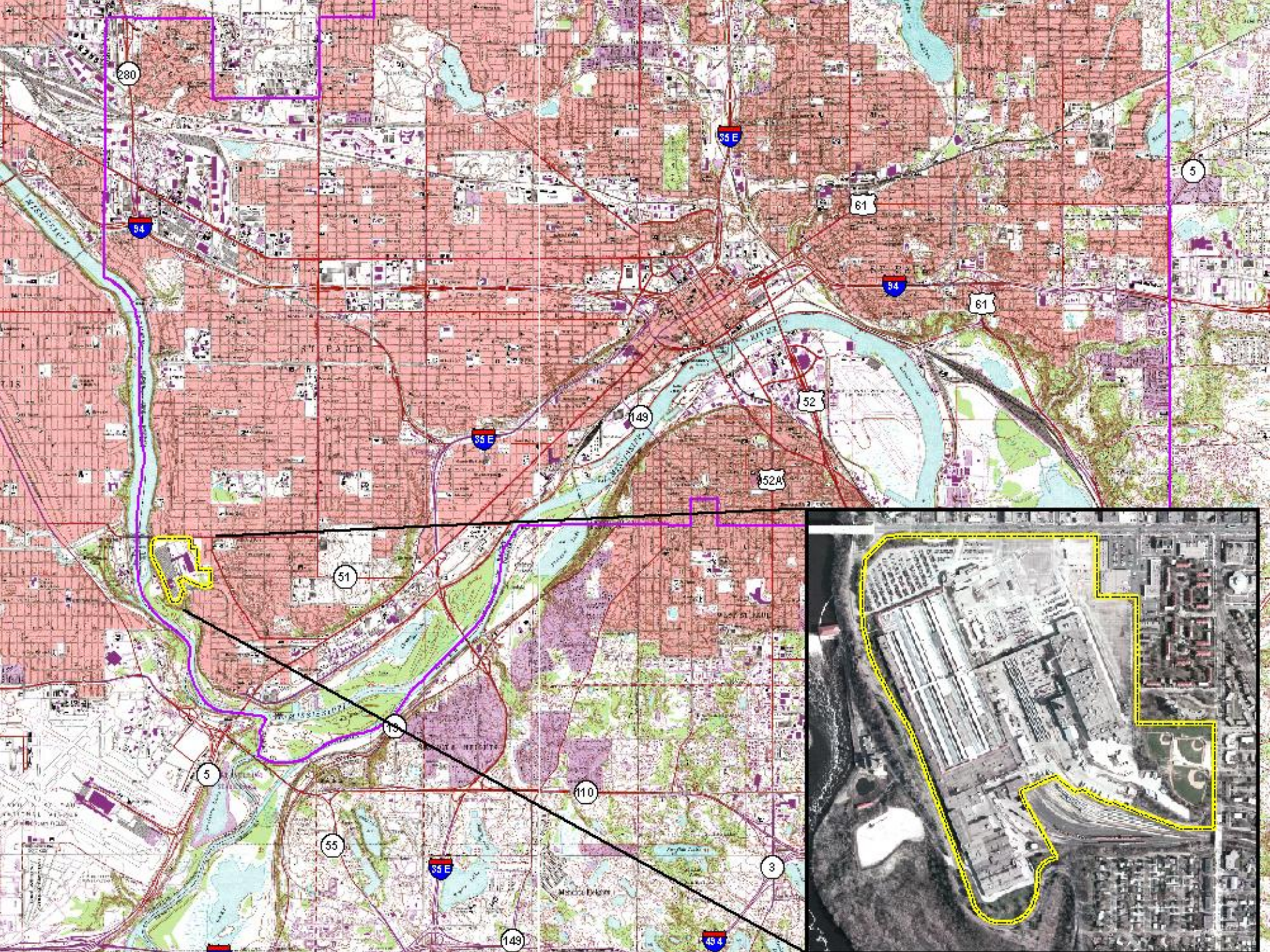
February 11, 2010

Thank you!

- MPCA – provided grant money
- Ramsey County GIS staff
- Ford Motor Company
- ARCADIS
- Ford Green Team
- Sustainable St. Paul staff
- Barr Engineering Co.

Background – Sustainable Stormwater Feasibility Report

- **Primary Goal:** Assemble and understand existing environmental data to integrate challenging site conditions with green stormwater management
- Companion report to the Ford "GREEN TEAM" Report
- Both reports:
  - Advise City in preparing for potential redevelopment
  - Inform potential developers on green management approaches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The Ford Plant has a rich history and contributes to a vibrant neighborhood

Part of Highland Park Neighborhood since 1924

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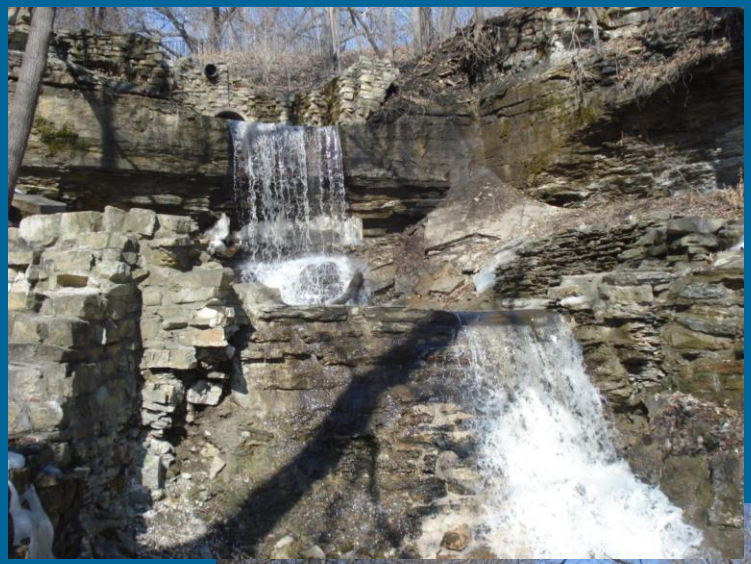
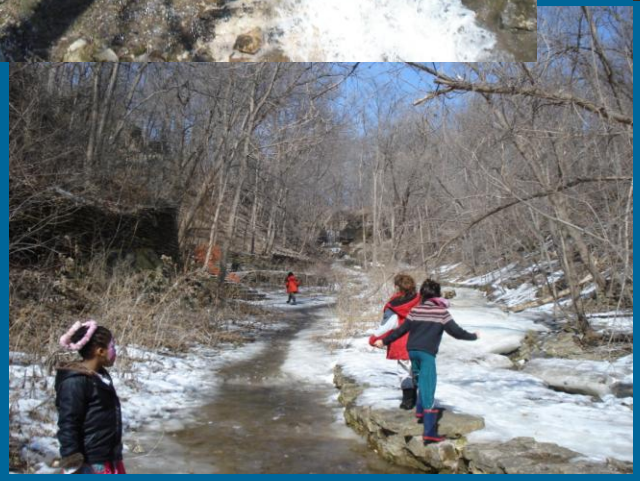
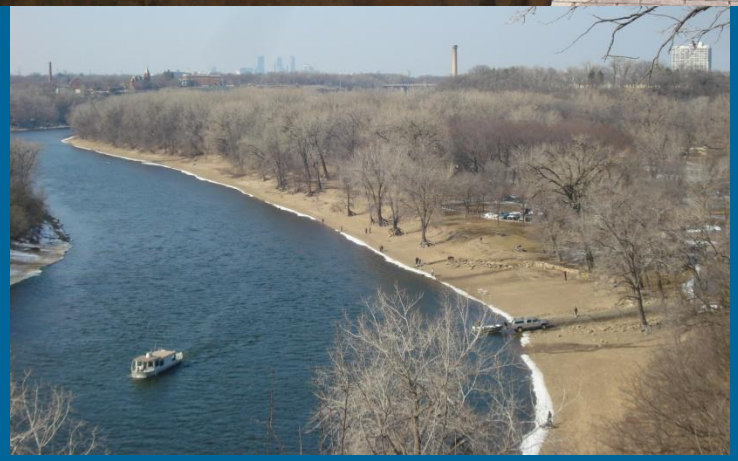
The Ford Plant has a rich history and contributes to a vibrant neighborhood

Located along Mississippi River Gorge







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Investigations to prepare for possible closure conducted by ARCADIS

- 3 Reports
  1. Phase I EA – 6/07
  2. Phase II – 10/07
  3. Supplemental Phase II – 5/08
- Completion of Phase II on hold until Summer 2010

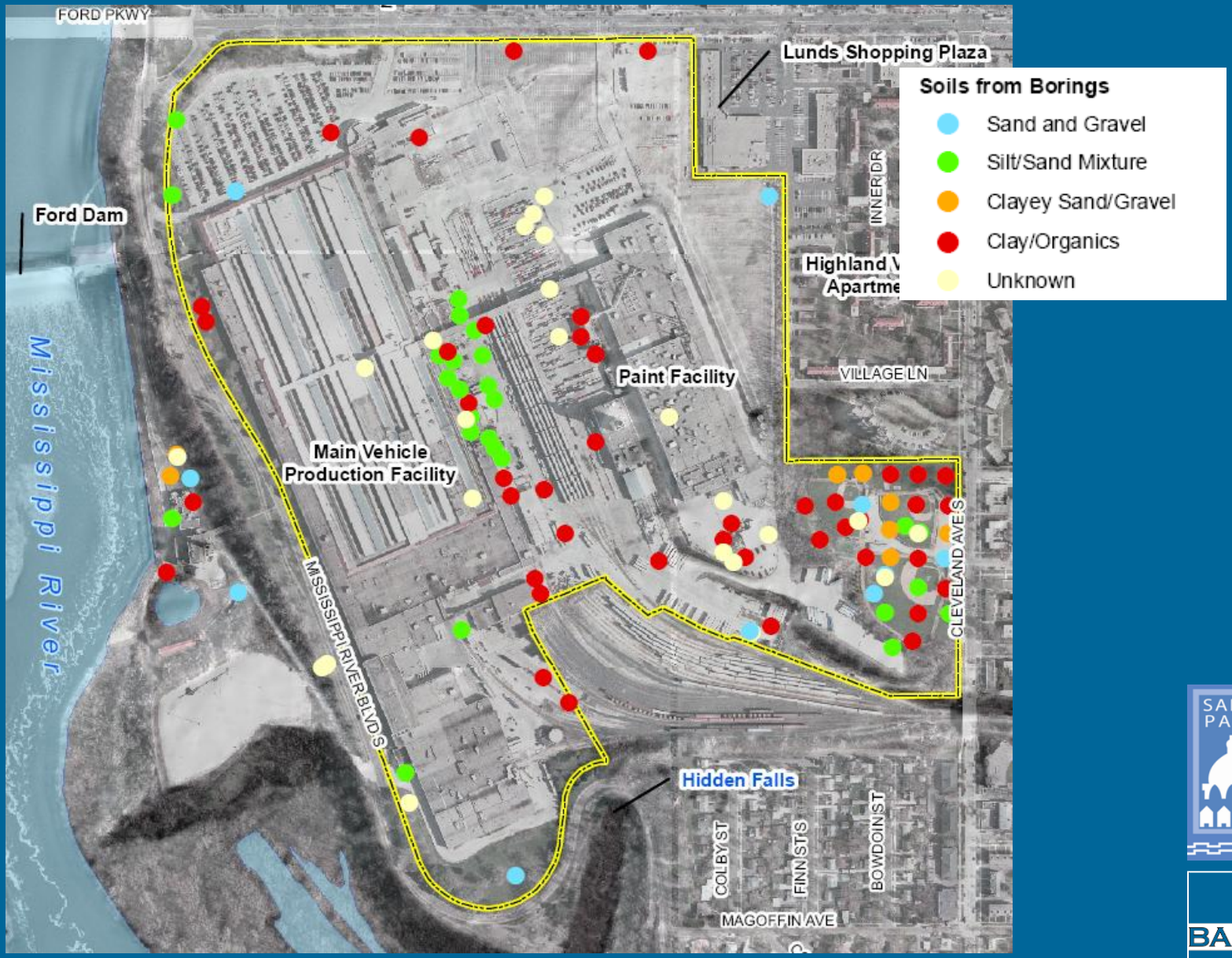
Redevelopment of Ford Plant offers opportunities for water quality improvement

Redevelopment of Ford Plant offers opportunities for water quality improvement

Ford Site presents challenges to infiltration

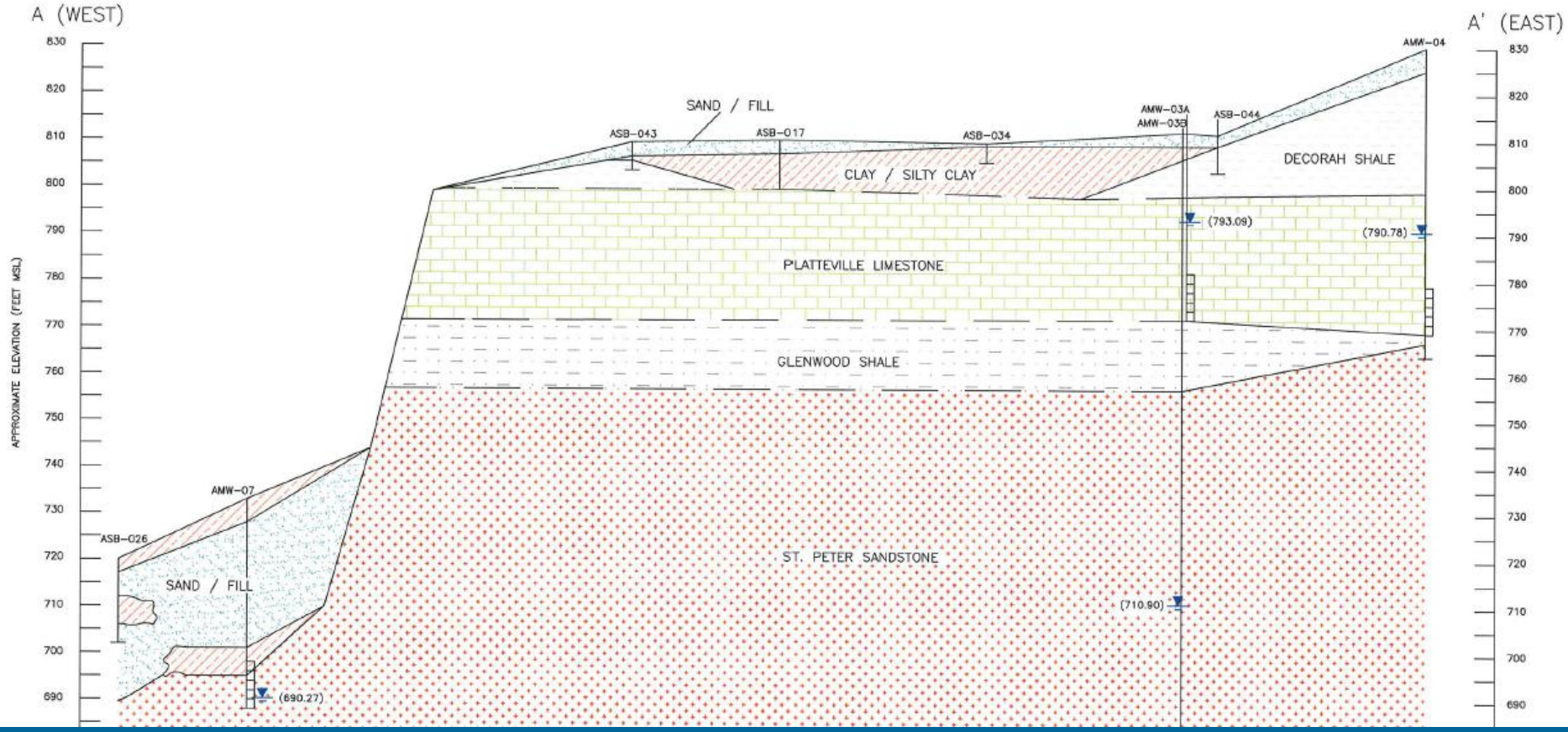
- Impermeable Soils
- Shallow Bedrock
- Perched Groundwater
- Contaminated Soils

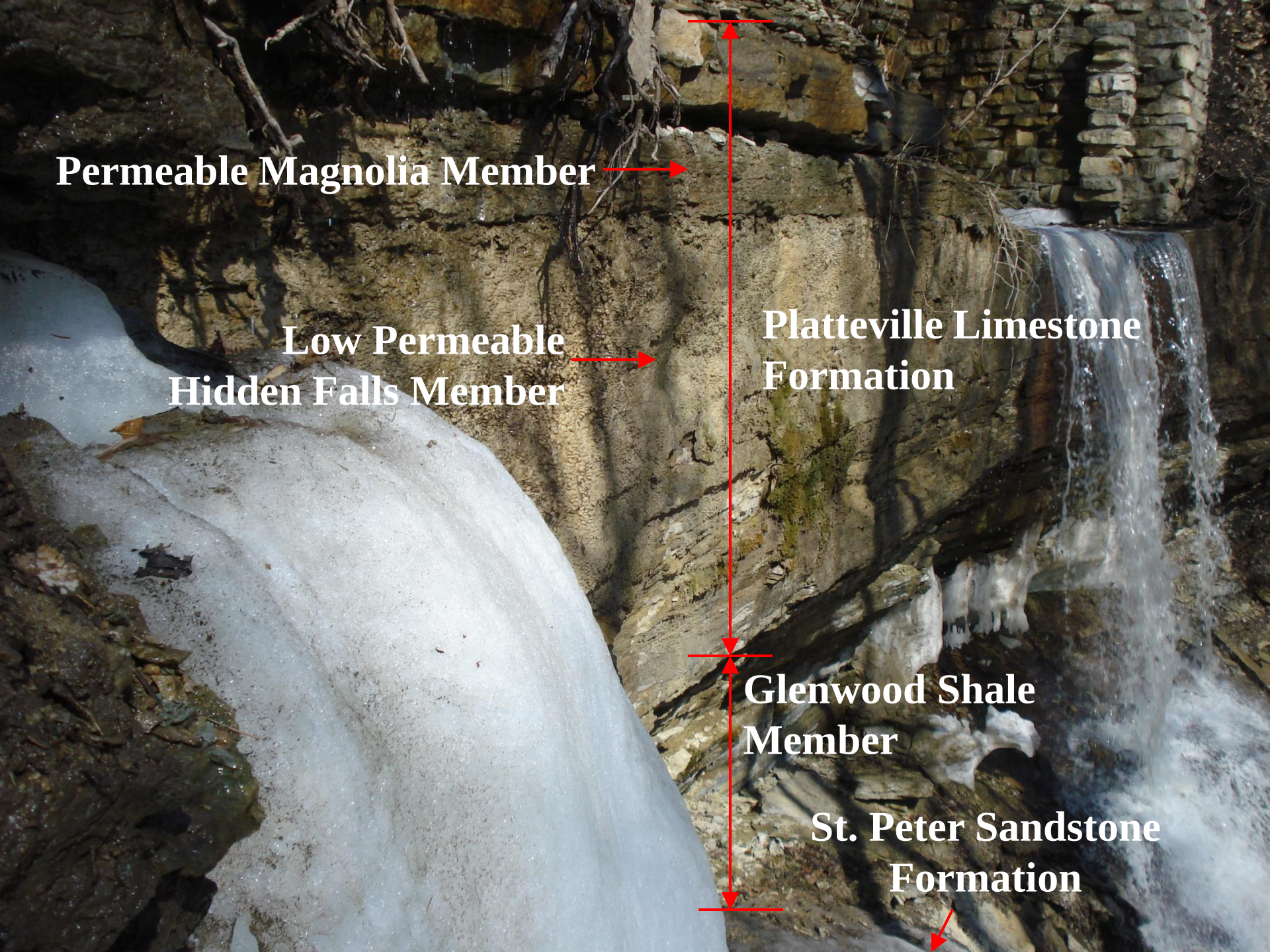
Soil borings show low-permeable soils



Soil borings indicate bedrock located 6 to 10 feet below ground

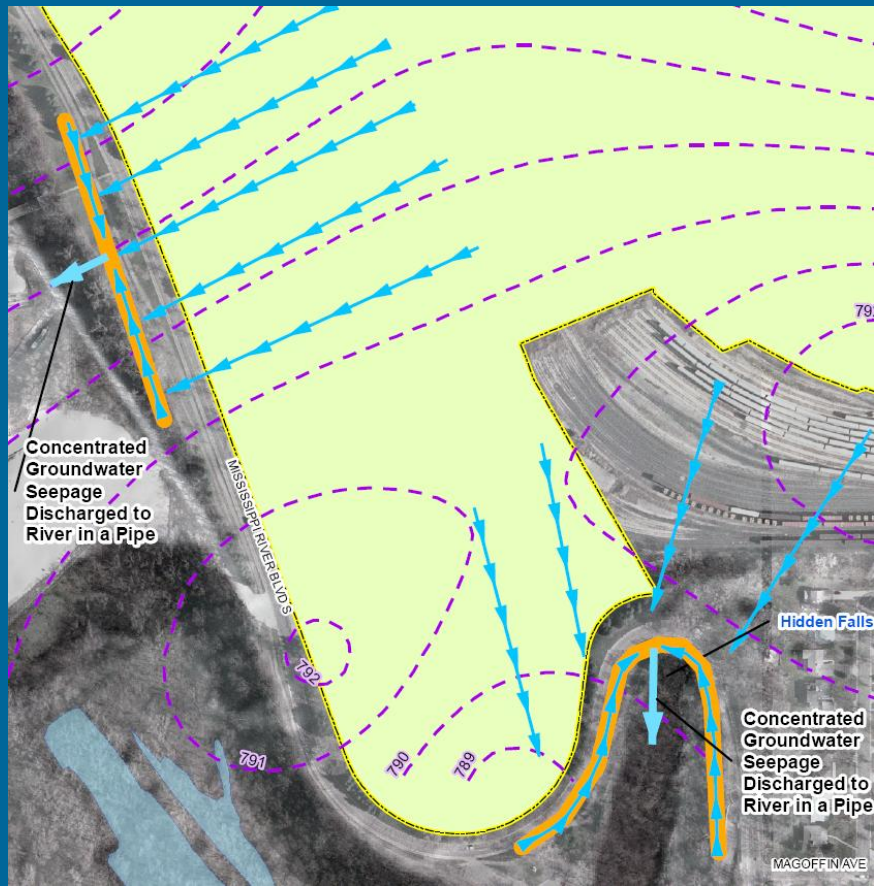
- Bedrock Profile from ARCADIS




Permeable Magnolia Member
Low Permeable
Hidden Falls Member
Platteville Limestone
Formation
Glenwood Shale
Member
St. Peter Sandstone
Formation

Increased groundwater seepage could cause erosion along bluffline

- Groundwater collection trenches could collect seepage and route to further treatment or the river

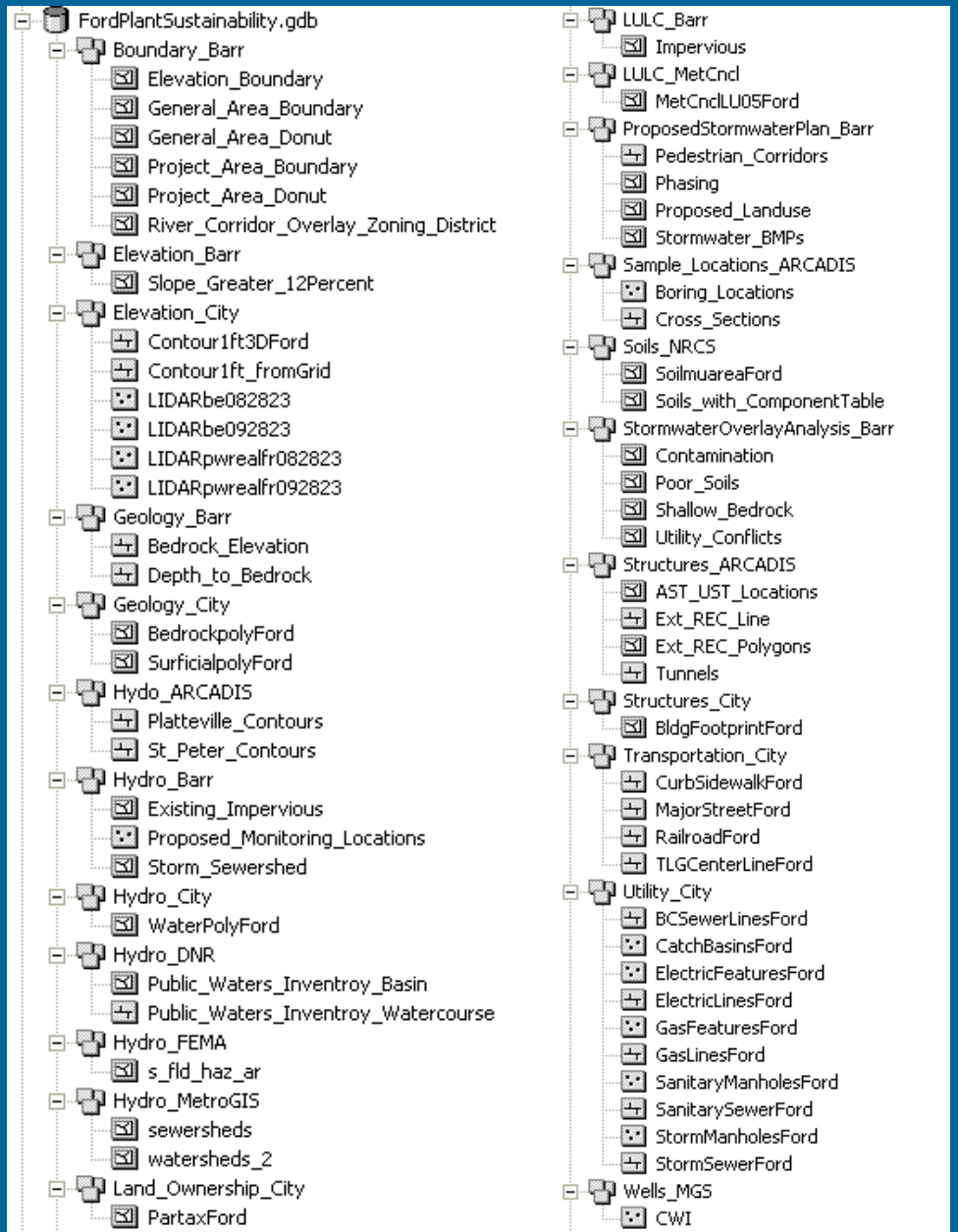


Contaminated soils found during Environmental Assessment Process

- Only Tier II Industrial SRV limits considered in Environmental Assessment
- Tier II Recreational SRVs or Tier II SLV (leaching) limits should be analyzed
- Extensive coordination with MPCA will be required
- Soil correction is a possibility

Data Aggregated into One Database to Assist Future Planning

- Data compiled from Ford, ARCADIS, City, Ramsey County, MnDNR, USGS, NRCS, and other public agencies
- Interactive map and database created to display data and allow for analysis
- Data included on a DVD
- Data in ESRI format



Conservation Design Process helps identify locations for infiltration

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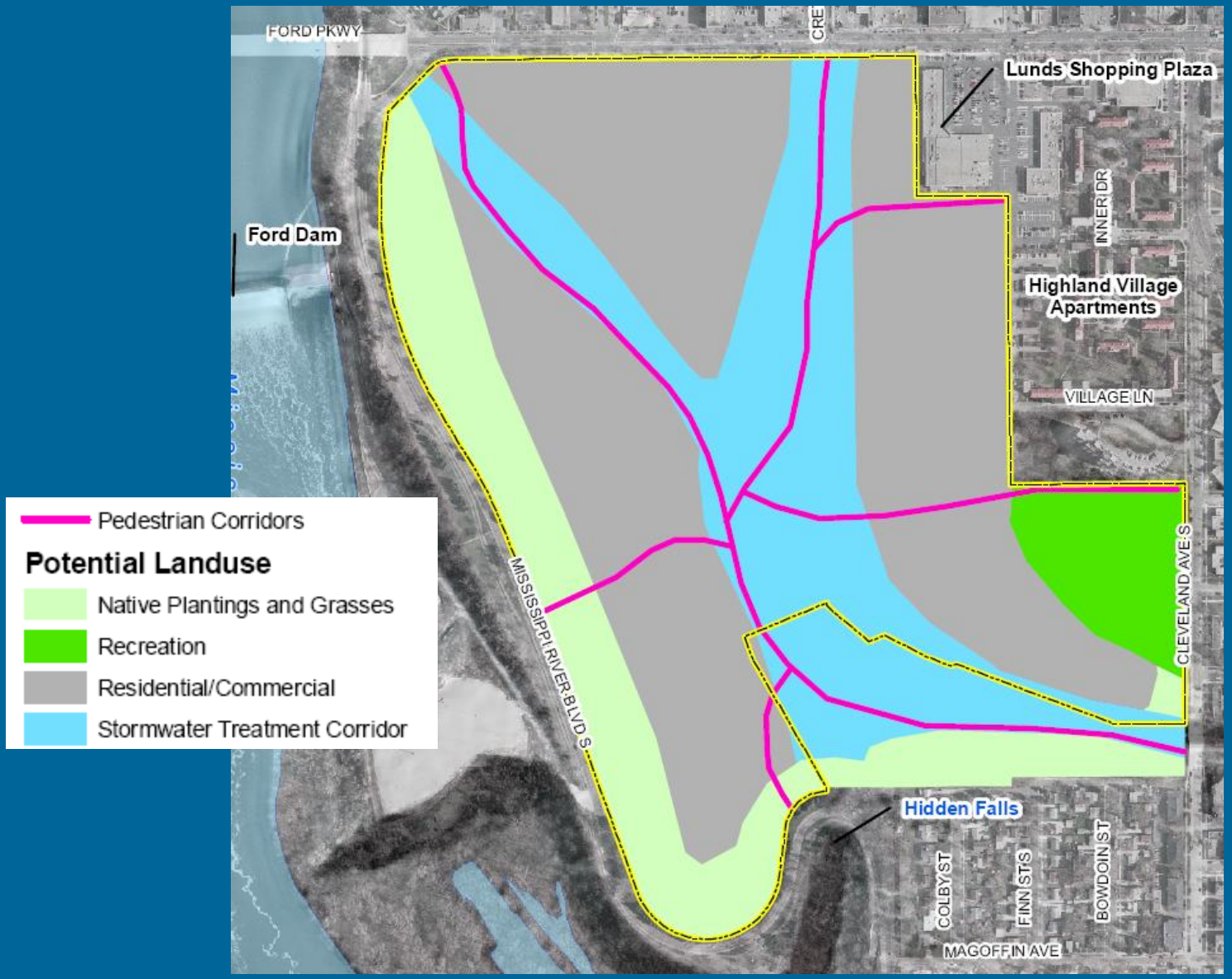
Integrated treatment system treats stormwater and provides an ecological corridor



Integrated treatment system treats stormwater and provides neighborhood amenities

Promote pedestrian/bike-friendly spaces

Impervious Surface Reduction reduces stormwater infrastructure needs

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Infiltration can be promoted at small and large scales

- Rainwater gardens treat small areas, 0.5 acre of impervious
- Infiltration basins can treat larger areas, up to 50 acres of impervious
- Underground infiltration can be used in areas with little available space
- Requires permeable soils or extensive soil correction

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Stormwater Reuse takes undesirable stormwater and makes it desirable

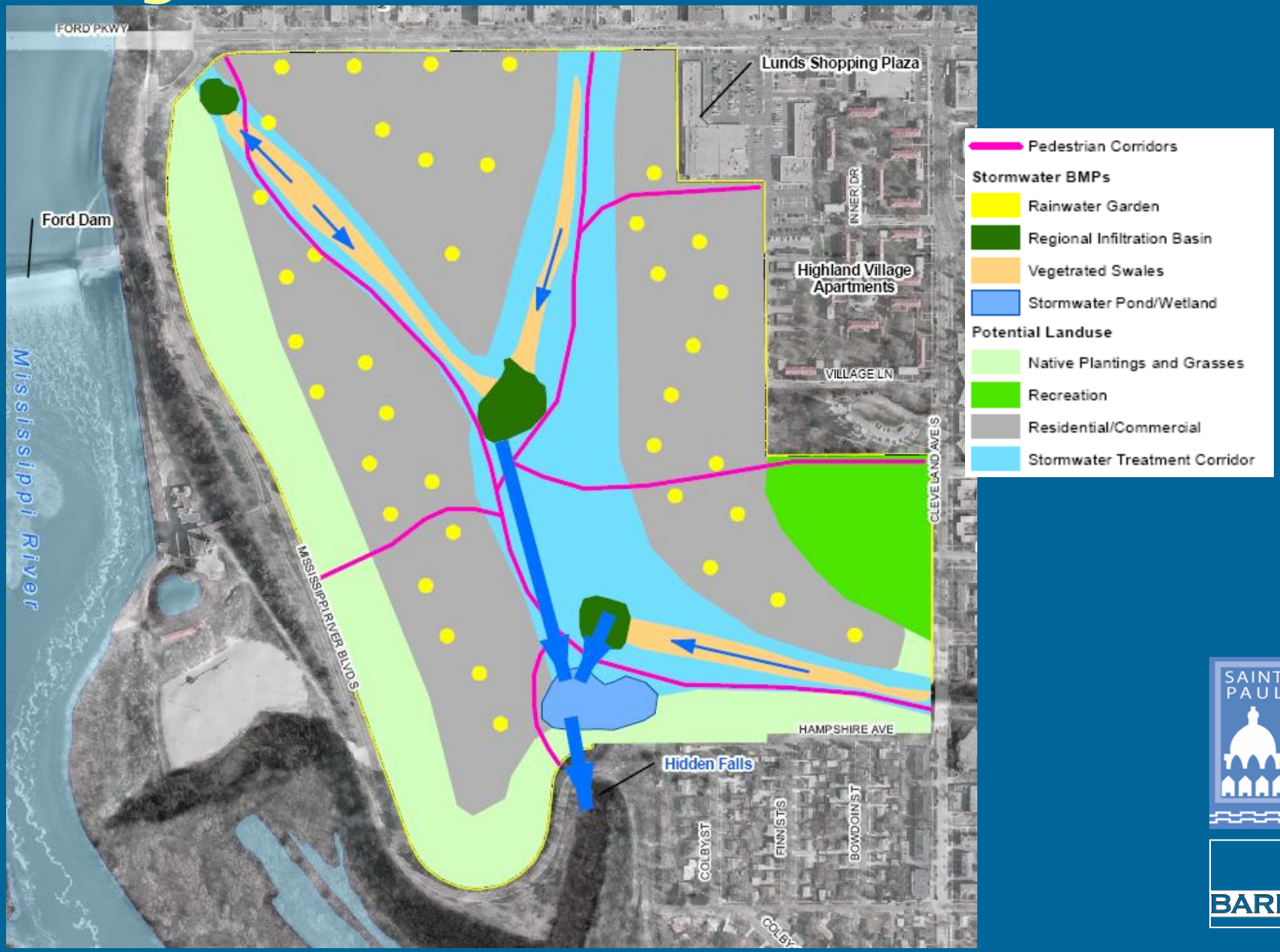
- Irrigation of urban trees, meadows
- Industrial reuse of stormwater

Silva Cell

Filtration can be used where site constraints prevent infiltration

- Filtration BMPs can use infiltration methods, with an underdrain
- Limited water quantity reduction benefit
- Pollutant reduction benefit, not quite as much as infiltration

Conceptual Integrated Stormwater Management Plan



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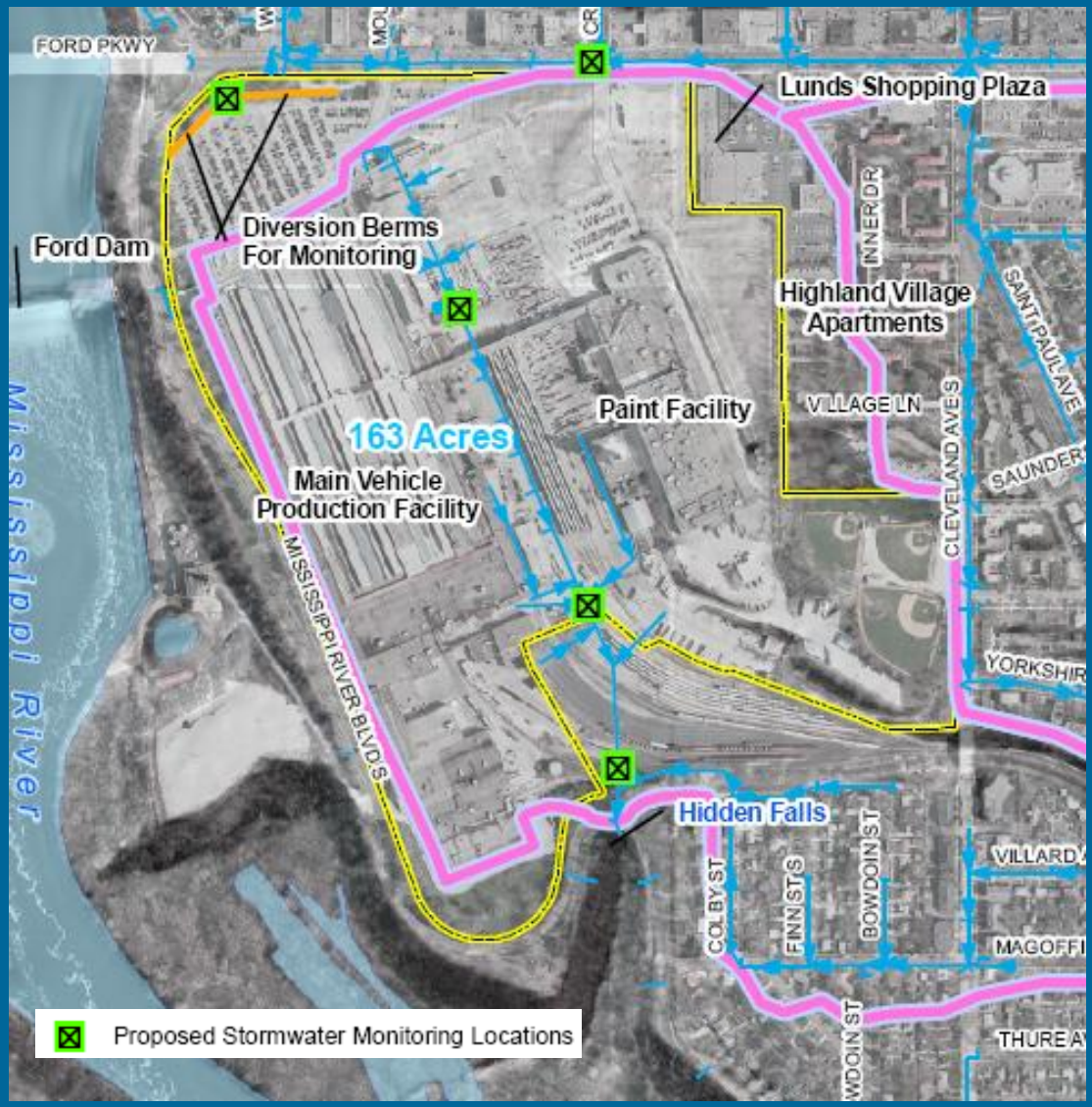
Monitoring is essential to quantify benefits of stormwater BMPs

- Installed before redevelopment to quantify existing conditions
- Measure flow and volume
- Helps calibrate water quality and quantity modeling



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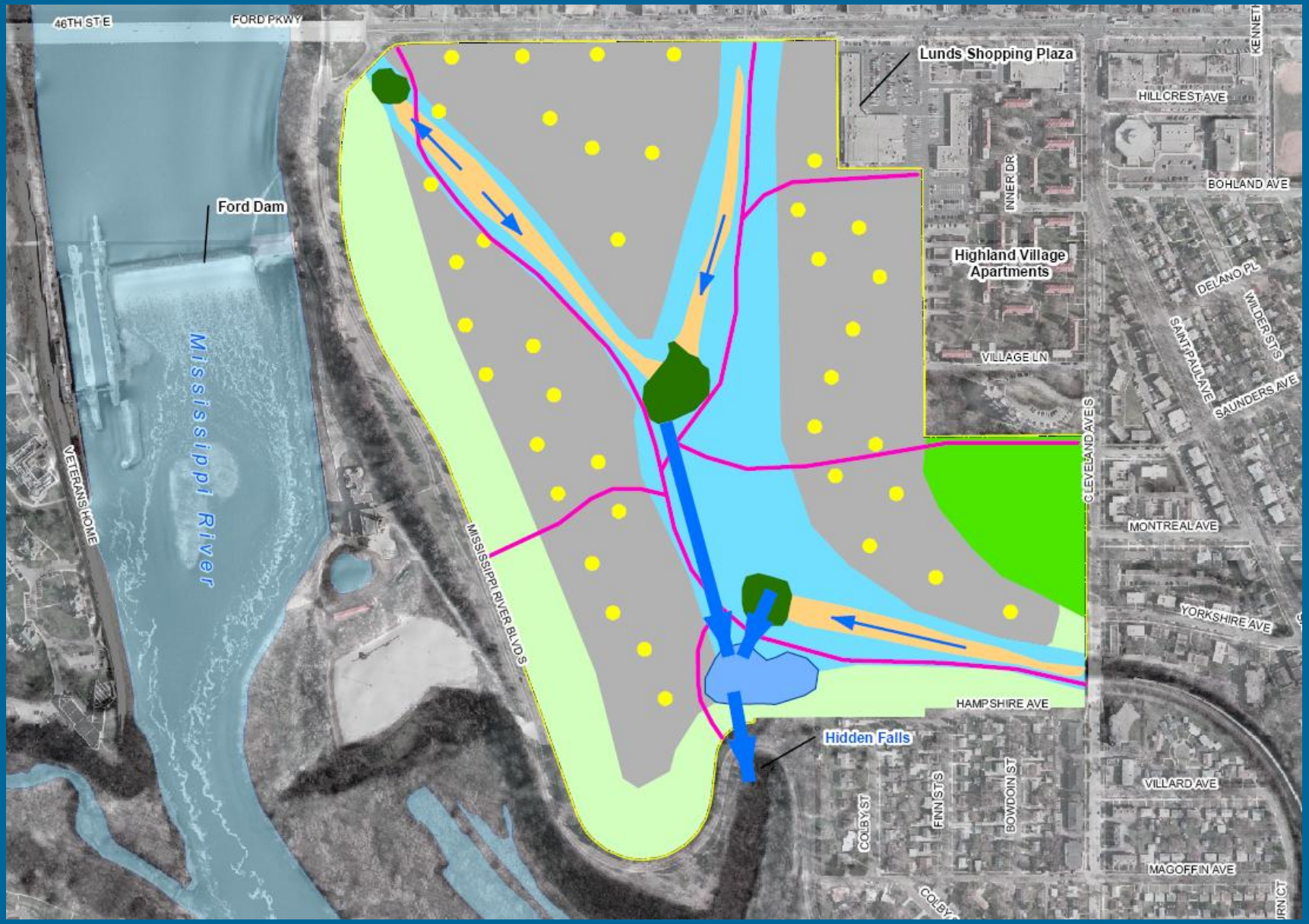
Additional investigations are required before stormwater concepts can be finalized

- Additional data from ARCADIS's Supplemental Phase II Environmental Assessment
  - Complete picture of hydrologic soils on site
  - Areas of contaminated soils
  - Locations of contaminated groundwater
- Need data on movement of water within the Platteville Limestone formation

Questions?



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